99

MAR 02 1984

Mr. Joe Jansen
Technical Services Section
Missouri Department of Natural Resources
P.O. Box 1368
Jefferson City, Missouri 65102

Dear Mr. Jansen:

Enclosed for your review is a draft copy of the McDonnell Douglas Corporation - St. Louis Tract I Resource Conservation and Recovery Act (RCRA) permit. We would appreciate your comments on this draft permit by March 16, 1984. Should you have any questions, the person on my staff most familiar with this subject, Stephen Busch, can provide additional information.

We hope to initiate a public comment period for this facility by March 30, 1984. Thus, your timely review and comments would be greatly appreciated.

Sincerely yours,

Lyndell L. Harrington, P.E.
Chief, Permits Section
Waste Management Branch
Air and Waste Management Division

Enclosure

ARWM:WMBR:PMTS:SBusch:lmh:x6531:3-2-84:Disk M

PMTS
Busch
Busch
3/2/84

PMTS
for Harrington
DeDegner
3/2/84

WMBR
Morby
Morby
3/2/84

EPA Statement

"1. The revisions submitted with your letter to Mr. L. Harrington of September 12, 1983, indicate that some changes have been implemented in your tank storage capability. Particularly a 3,000 gallon carbon steel tank has been replaced by a 3,380 gallon fiberglass tank, an additional 2,000 gallon carbon steel tank has been activated, and a 4,380 gallon fiberglass tank has been placed into service.

"a. EPA and MDNR have received information on various tanks, the overfill control, and leak detection systems; however, the information on the age of the various tanks is not complete. Please provide the following information in a tabular form; tank identification, capacity, contents, material of construction, overfill control, leak detection system, and date (month and year) that tank was placed into service. This information would be useful as a summary of the text found in sections C and D."

MDC Response

The following is a tabulation per your request.

Tank Identification	Capacity in Gallons	Contents	Material of Construction	Overfill Control	Leak Detection System	Date Placed into Service Month/Year
H-19	10,000	19% sodium hydroxide	Carbon steel	Containment curb with drain to Wastewater Pretreatment Plant	pH sensor with alarm	-/1966
H-20	10,000	"	"	"	"	-/1966
H-12	500	57% nitric acid 8% hydrofluoric acid	Black polyethylene	"	"	-/1968
H-13	500	"	"	"	"	-/1968
H-14	500	"	"	"	"	-/1968
H-15	500	"	"	"	"	-/1968
H-16	500	"	"	"	"	-/1968
H-1	750	57% nitric acid 8% hydrofluoric acid	High density black polyethylene	"	"	8/1980
H-2	750	"	"	"	"	8/1980
H-3	750	"	"	"	"	8/1980
H-4	750	"	"	"	"	8/1980
H-5	750	"	"	"	"	8/1980
H-6	750	"	"	"	"	8/1980

Tank Identification	Capacity in Gallons	Contents	Material of Construction	Overfill Control	Leak Detection System	Date Placed into Service Month/Year
Hush House Waste Tank	3,380	JP-4/JP-5 Turbine engine fuel plus hydraulic oils	Polyester resins reinforced with glass fibers	80% full level alarm	Ground water hydrocarbon detection system	7/1983
Fuel Pit No. 3 Waste Tank	2,000	"	Carbon steel	75% full level alarm	"	-/1978
Fuel Pit No. 4 Waste Tank	2,000	"	"	"	"	6/1983
F-18 Silencer Waste Tank	2,130	"	Fiberglass	"	"	-/1979
Bldg. 28 Waste Tank	5,000	JP-4/JP-5 Turbine engine fuel	Carbon steel	Manually checked after each "spill"	"	-/1954
Bldg. 6 Waste Oil	1,000	Lubricating oil	Carbon steel	None	"	12/1970
Bldg. 14 Sludge Holding	120,000	Industrial Wastewater Pretreatment sludge	Reinforced concrete	Overflow piped to Pretreatment Plant influent (closed loop)	Daily visual	1/1969
Ramp Station 1 and 2 Waste Tank	4,380	JP-4/JP-5 Turbine engine fuel	Polyester resins reinforced with glass fibers	80% full level alarm	Ground water hydrocarbon detection system	9/1983

EPA Statement

"b. In your letter of October 12, 1983, to Mr. D. Wagoner in response to 'EPA Statement 5,' it is indicated that the hydrocarbon detection system is checked for functional operation every thirteen weeks. This information should be incorporated into the inspection procedures contained on revision pages F-6, 2 of 4, and 3 of 4."

MDC Response

This response revises our Part "B" application by revising our "Attachments" section, "List of Attachments" [Enclosure (6)]. We have added to Section "F" our Standard Maintenance Procedure (SMP) 190-70-13, "Hydrocarbon Leak Detectors for Underground Tanks," as Attachment No. 2, Pages F-19, F-20, F-21, and F-22 [Enclosure (7)]. We are providing sufficient copies to EPA and MDNR to allow for upgrading previously submitted Part "B" application copies.

EPA Statement

"c. Partial closure of the facility is discussed on page I-2 of the application. Is there any planned removal of the existing underground tanks and replacement with fiberglass tanks. If not, what criteria determines when these tanks are replaced?"

MDC Response

We do not have a scheduled plan for removal of existing underground tanks. Tanks are replaced when they are found to be leaking. At this time, our Design Engineering Department is selecting fiberglass tanks based on their resistance to internal and external corrosion/erosion and cost.

EPA Statement

"d. The revised closure cost estimates contained on revision page I-8 still indicate five underground tanks, please revise this to show the additional two tanks, also revise the cost estimate if necessary. The maximum inventory indicated on revised page I-3 appears to be in error; the titanium etch storage tank volume of 37,620 appears excessive for six tanks at 750 gallons each which would result in 4,500 gallons. Likewise, is the maximum inventory of 100 pounds of storage in the explosure storage facility of building 10 accurate?"

MDC Response

Thank you for finding our error on Page I-3. We have corrected this number with Enclosure (8). We have also revised Pages I-7, I-8, and I-9 to include the additional two tanks and provide the annual cost update [see Enclosure (9)]. We are providing sufficient copies to EPA and MDNR to allow for upgrading previously submitted Part "B" application copies.

The maximum planned inventory of explosives was originally 100 pounds based on net explosive weight. Due to our inability to locate an approved explosive disposal facility, we have continued to store explosives and now have slightly less than

700 pounds net explosive weight in Building 10. We have issued a Purchase Order for destruction of these reactive wastes. This Purchase Order is based on the condition that the vendor will be able to obtain the necessary disposal permits.

Sincerely,

MCDONNELL AIRCRAFT COMPANY

J. C. Patterson, Section Manager
Environmental Compliance
Dept. 191C, Bldg. 305, L-4W

JCP:bem

EC: Mr. Joe Jansen
Waste Management Program
Missouri Department of Natural Resources
P.O. Box 1368
Jefferson City, Missouri 65102
(with all copies of all enclosures)

REGISTERED MAIL - RETURN RECEIPT

ATTACHMENT I

EMERGENCY COORDINATORS

The following is a tabulation of titles and the personnel filling these positions at this time. Telephone numbers have been provided for use during "off duty" hours.

	Title	Name	Off Duty Telephone No.
1.	Section Manager, Dept. 191C, Environmental Compliance	J. C. Patterson	(314) 567-1336
2.	Branch Manager, Dept. 191C, Environmental Compliance	T. W. McMahon	(314) 291-7255
3.	Manager, Dept. 190, Plant Engineering	R. E. Bishop	(314) 389-0467
4.	Director, Dept. 190, Plant Engineering	E. M. Myers	(314) 432-2107

HAZARDOUS WASTE STORAGE AREAS

INSPECTION INSTRUCTIONS

1. Each area is to be inspected each work day.

2. Each area must be maintained in good working order.

3. The following pages describe certain specific details of each of the areas. These details are to be used in addition to good judgment in evaluating the condition of the storage areas.

4. Any equipment or system failures must be:
   a. Reported to the area Maintenance Department for immediate correction;
   b. Reported to your next level of supervision;
   c. Detailed on the inspection sheet or supplemental sheets as required.

CONTAINERIZED WASTE STORAGE

The container storage area consists of two separate storage areas.

Area No. 1 is divided into two categories by a six-inch-high curb, and each has a sump to accumulate any leakage that occurs. Containers of acids, alkalis, and unwashed empty drums that previously held hazardous wastes are stored in one section of this shelter. The other section of this shelter stores paint sludges, oils, solvents, and unwashed empty drums that previously held oils or solvents.

Area No. 2 is used for cyanides and sulfides. It has a sump to accumulate any leakage that occurs.

Drum containers are positioned in rows, two drums wide with an aisle between. This aisle is always maintained to allow for inspection of leaky containers. Five-gallon carboys are packed in a cardboard carton, taped closed, and stacked on a skid. Only unwashed empty drums are stacked. Full drums are never stacked in this storage facility.

The floors are to be inspected to ensure their integrity, especially in respect to leak or spill containment. The sumps do not have automatic sump pumps; therefore, they cannot be "accidentally" spilled. A single, portable sump pump with a capacity of 21 gallons per minute is provided for emptying the sumps.

Accumulations must be removed from the sumps as soon as an analysis is completed to determine whether they are either hazardous or acceptable for release.

All containers must be placed on wooden skids to prevent direct contact with leaking liquids.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out". Also, "No Smoking" signs that are legible from a distance of 50 feet are posted in the container storage area.

Daily: Check for leaking containers;
Check for deterioration of containers;
Check the sump for evidence of a spill;
Check aisle space to be sure that aisles are not blocked;
Check to ensure that only empty drums are being stacked.

Weekly: Check integrity of containment curbs.

BUILDING 52 AREA ALUMINUM ETCHANT TANKS

Two 10,000-gallon capacity, vertical, above-ground tanks provide 20,000-gallon storage for waste sodium hydroxide solution from chemical milling of aluminum. These two tanks are designated as H-19 and H-20.

Each tank is structurally supported on a bed of crushed limestone. The limestone is held in place by the 3-inch-thick asphalt spill pad that surrounds these tanks. This asphalt pad is surrounded by a 9-inch-high asphalt curb. These tanks are protected from disposal vehicle damage by the strategic placing of 4-inch-diameter concrete-filled pipe guards on the traffic lane sides of this area.

The two 10,000-gallon waste sodium hydroxide storage tanks are equipped with level indicators.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check level of waste in tanks;
Check for evidence of a spill or overflow;
Check external condition of tank.

Weekly: Check integrity of containment curbs;
Check the tanks for leaks or evidence of cracks or structural failure.

Annually: Drain and rinse the tanks. Inspect the interior of the tanks for evidence of cracks or structural failure.

BUILDING 52 ETCH TANKS

Five 500-gallon capacity, above-ground tanks provide 2,500-gallon maximum storage for waste nitric and hydrofluoric acid solution from chemical milling of titanium. These five tanks are designated as H-12, H-13, H-14, H-15, and H-16.

The tanks are covered with hinged tops to prevent precipitation from entering. The area under the tanks and platform is sealed with a 3-inch-thick asphalt pad. This pad is surrounded by a 6-inch-high asphalt curb. Inside the curb area is a 4-inch depth of crushed limestone and a drain to our industrial waste water pretreatment plant.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check external condition of tanks;
Check area around tanks for evidence of a spill or leak.

Weekly: Check the integrity of the containment curbs.

Monthly: Check the condition of the interior of the tanks.

BUILDING 52 TITANIUM ETCH TANKS

Six 750-gallon capacity, above-ground tanks provide 4,500-gallon maximum storage for waste nitric and hydrofluoric acid solution from chemical milling of titanium. These six tanks are designated as H-1, H-2, H-3, H-4, H-5, and H-6.

The tanks are closed with cap type covers to prevent precipitation from entering. The area under the tanks and platform is sealed with a 3-inch-thick asphalt pad. This pad is surrounded by a 6-inch-high asphalt curb. Inside the curb area is a 4-inch depth of crushed limestone and a drain to the previously mentioned industrial waste water pretreatment plant.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check external condition of tanks;
Check area around tanks for evidence of a spill or leak.

Weekly: Check the integrity of the containment curbs.

Monthly: Check the condition of the interior of the tanks.

OPERATION

CAUTION! BEFORE OPERATING THE POLLULERT HYDROCARBON DETECTION SYSTEM, ALL INSTALLATION AND CALIBRATION INSTRUCTIONS MUST BE FOLLOWED.

1. ON-OFF switch should be ON and CALIBRATE MONITOR arrow should point to MONITOR.

2. Turn the OFF-LOUD control clockwise to place HYDROCARBON ALARM in standby condition. If hydrocarbon is detected at any sensor, the audible ALARM will sound. Advancing the control further clockwise increases the audible output of the ALARM. To turn off or defeat the ALARM, turn the control counter clockwise until a click is heard. Sensor lamps, relay contacts, and 0 to 6 VDC output will continue to operate even though the audible alarm is silenced.

3. INTERPRETING SENSOR LAMPS

   - Under normal operating conditions, all lamps should be off except those associated with dry sump probe POL209 which should be flashing yellow indicating a dry condition.

   - If hydrocarbon is detected at a sensor the red sensor lamp will flash on and off.

   - If ground water probes or surface water probes should not float but become dry the yellow lamp will flash. The probes should be inspected to determine if the float has hung up and become high and dry or if the well or sump has gone dry. It is not necessary that water be present, hydrocarbon which enters a dry well or sump will be detected.

   - Ground water probes POL202 and POL203 and surface water probes POL205 and POL206 are equipped with low float sensors. They are mounted on top of the float and have been assigned sensor number one. If they become immersed in water due to a low or sunk float, red sensor lamp number one will light continuously and the probe should be inspected.

   - If dry sump probe POL209 is immersed in water both sensor lamps will be extinguished.

   - The cable to the probe is monitored by the Pollulert System. If for some reason, the cable is severed, or the sensor should fail (open circuit), the yellow lamp for the sensor will light continuously.

   - Any change in the status of a sensor between the mediums of air-water-hydrocarbon will be indicated by the visual indicators after two to four minutes.

MEMORANDUM

191C-1110
18 Oct 83

Subject: FUNCTIONAL TEST PROCEDURE FOR MALLORY "POLLULERT" HYDROCARBON LEAK DETECTORS

To: R. B. Cline

CC: T. W. McMahon

From: J. C. Patterson

1. The purpose of this memo is to provide written documentation of the test frequency and technique employed by the Dept. 197 Calibration Maintenance.

2. The principle of operation is as follows.

The Pollulert Hydrocarbon Detection System continuously monitors the thermal conductivity of the fluid surrounding the sensor. Thermal conductivity is the rate of heat transfer per unit area (Calories/second) (cm^2) per unit temperature gradient (°C/cm). Hydrocarbon thermal conductivity is in the narrow range of .0003 to .0005 compared to .0013 for water and .00006 for air.

The sensor consists of a semiconductor junction, which is heated by passing a constant current through it for a constant time period. The temperature of the sensor is then measured. It is then allowed to cool for another time period and again measured. The difference between these two temperatures is a function of the thermal conductivity of the surrounding medium. The cycle is then repeated.

A microprocessor is used to perform the various operations of cycling, measuring, storing, and calculating. It is programmed to signal when a temperature difference corresponding to the thermal conductivity of hydrocarbon, air or water is measured. Measurements are averaged over a number of cycles to assure against false signals.

Long term stability, even during extended power outages, is assured by providing a calibrated reference point in the form of a variable resistor, which is set during installation. If recalibration is needed, the electronic Control is switched into the calibrate mode while the sensor is immersed in water. The microprocessor will automatically perform a 10-minute calibration cycle and will indicate a new setting of the variable resistor. Hydrocarbon is not needed for calibration.

3. The procedure for functional calibration is as follows.

   The leak detection system is checked for functional operation every thirteen weeks. This functional check consists of removing each of the underground leak detection probes from their respective monitoring wells and placing each detector probe into a container of ethylene glycol. This simulates the detection of hydrocarbons in the monitoring well. A properly functioning probe causes a visual and audio alarm to occur. After the probe and alarm system are proven to be functional, they are marked with a Calibration Department seal that reflects the date and inspector's name.

4. This functional calibration technique has been verified as being a valid functional check by Mr. Darryl Day of Pollulert Systems, Mallory Components Group, Indianapolis, Indiana [telephone (317) 856-3857].

5. If you need any assistance in your efforts to maintain the operations, please contact us.

J. C. Patterson

J. C. Patterson, Section Manager
Environmental Compliance
Dept. 191C, Bldg. 305, L-4W
Sta. 39824

JCP:bem

HUSH HOUSE TANK

One 3,380-gallon capacity, horizontal, below grade tank provides storage for waste turbine engine (jet aircraft) and hydraulic system spillage. This tank is designated as "Hush House Waste Tank".

A concrete slab covers this tank as well as the entire area where the tank is located (Figure D-7). The tank is equipped with a liquid level sensing system that indicates when the tank is approximately 80% full. Leaks are monitored by a hydrocarbon sensing system that is installed in a monitoring well adjacent to this tank.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check the monitoring well control panel for an indication of a leak;
Check surface above the tank for signs of a leak.

FUEL PIT #3

One 2,000-gallon capacity, vertical, below grade tank provides storage for turbine engine (jet aircraft) fuel that is spilled during fueling or defueling operations. This tank is designated as "Fuel Pit No. 3 Waste Tank".

A concrete slab covers this tank as well as the entire area where the tank is located (Figure D-8). The tank is equipped with a liquid level indicating system that sounds an alarm when the tank is approximately 75% full. Leaks are monitored by a hydrocarbon sensing system that is installed in a monitoring well adjacent to this tank.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check the monitoring well control panel for an indication of a leak;
Check surface above the tank for signs of a leak.

FUEL PIT #4

One 2,000-gallon capacity, vertical, below grade tank provides storage for turbine engine (jet aircraft) fuel that is spilled during fueling or defueling operations. This tank is designated as "Fuel Pit No. 4 Waste Tank".

A concrete slab covers this tank as well as the entire area where the tank is located (Figure D-13). The tank is equipped with a liquid level indicating system that sounds an alarm when the tank is approximately 75% full. Leaks are monitored by a hydrocarbon sensing system that is installed in a monitoring well adjacent to this tank.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check the monitoring well control panel for an indication of a leak;
Check surface above the tank for signs of a leak.

F-18 SILENCER

One 2,000-gallon capacity, horizontal, below grade tank provides storage for waste turbine engine (jet aircraft) and hydraulic system spillage. This tank is designated as "F-18 Silencer Waste Tank".

A concrete slab covers this tank as well as the general area where the tank is located. The tank is equipped with a liquid level sensing system that flashes an alarm when the tank is approximately 75% full. Leaks are monitored by a hydrocarbon sensing system that is installed in a monitoring well adjacent to this tank.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check the monitoring well control panel for an indication of a leak;
Check surface above the tank for signs of a leak.

BUILDING 28 WASTE TANK

One 5,000-gallon capacity, horizontal, below grade tank provides storage for jet aircraft fuels that are leaked or spilled during the testing of aircraft fuel systems. This tank is designated as "Bldg. 28 Waste Tank".

A concrete slab covers this tank as well as the general area where the tank is located. Leaks are monitored by a hydrocarbon sensing system that is installed in a monitoring well adjacent to this tank.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check the monitoring well control panel for an indication of a leak;
Check surface above the tank for signs of a leak.

RAMP STATION #1 AND #2 WASTE TANK

One 4,380-gallon capacity, horizontal, below grade tank provides storage for jet aircraft fuels that are leaked or spilled during the repair of aircraft fuel systems. This tank is designated as "Ramp Station 1 and 2 Waste Tank".

A concrete slab covers this tank as well as the general area where the tank is located (Figure D-14). The tank is equipped with a liquid level sensing system that lights a visual alarm when the tank is approximately 80% full. Leaks are monitored by a hydrocarbon sensing system that is installed in a monitoring well adjacent to this tank.

Signs that are legible from a distance of 50 feet are posted at this waste storage tank; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check the monitoring well control panel for an indication of a leak;
Check surface above the tank for signs of a leak.

BUILDING 6 WASTE OIL TANK

One 1,000-gallon capacity, horizontal, below grade tank provides storage for oil that has been separated from the condensate of an oil-lubricated, steam-operated air compressor. This tank is designated as "Bldg. 6 Waste Oil Tank".

A concrete slab covers the area above this tank (Figure D-11). Leaks are monitored by a hydrocarbon sensing system that is installed in a monitoring well adjacent to this tank.

The level is also randomly checked by the inspector during the leak detection system monitoring that takes place each work day.

Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily: Check the monitoring well control panel for an indication of a leak;
Check surface above the tank for signs of a leak.

BUILDING 14 SLUDGE TANK

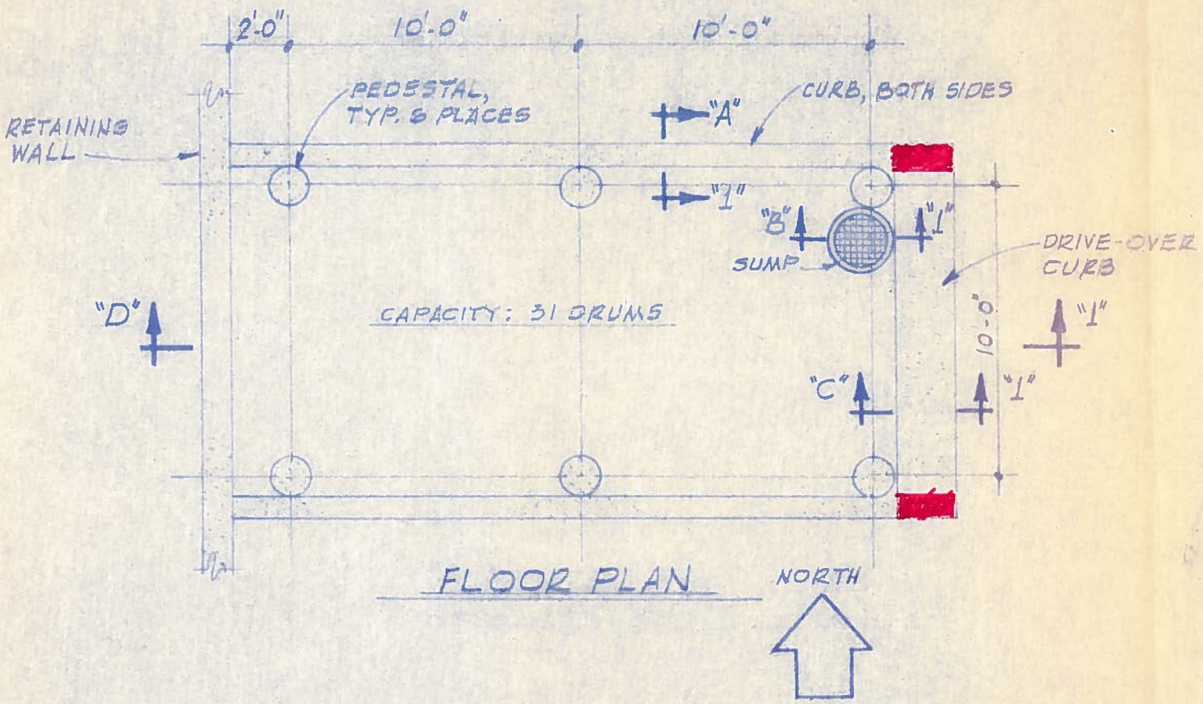
One 120,000-gallon capacity, inground tank provides storage for industrial waste water pretreatment sludge prior to dewatering. This tank is designated as "Bldg. 14 Sludge Holding Tank".

This inground tank is equipped with an overflow drain which leads to the influent of our waste water pretreatment plant.

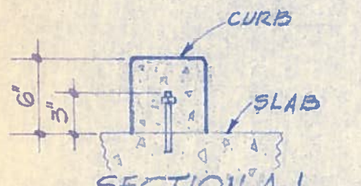
Signs that are legible from a distance of 50 feet are posted at this waste storage area; these signs bear the legend "Danger - Unauthorized Personnel Keep Out".

Daily:	Check level of waste in tank; Check for evidence of a leak or spill around the tank.
Weekly:	Check for cracks or deterioration of the concrete tank wall.
Every Five Years:	Drain and rinse the tank. Check entire inside wall and floor for cracks, spalling, and corrosion of the concrete; Check for corrosion of piping.

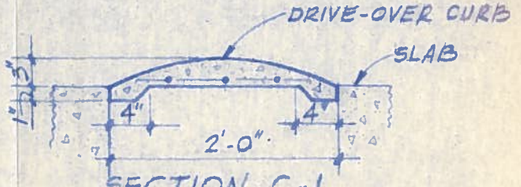
ENCL NO 3



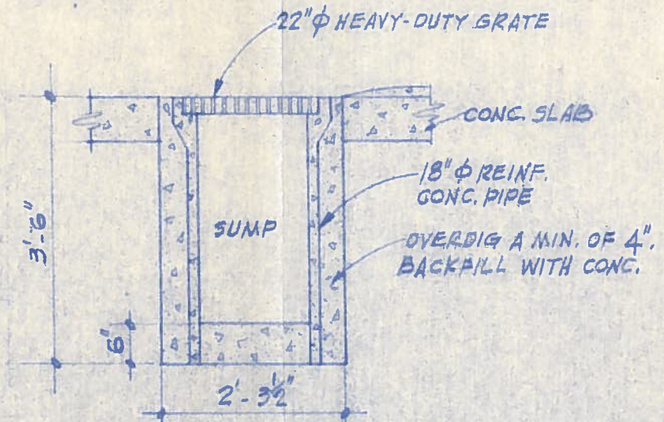
FLOOR PLAN



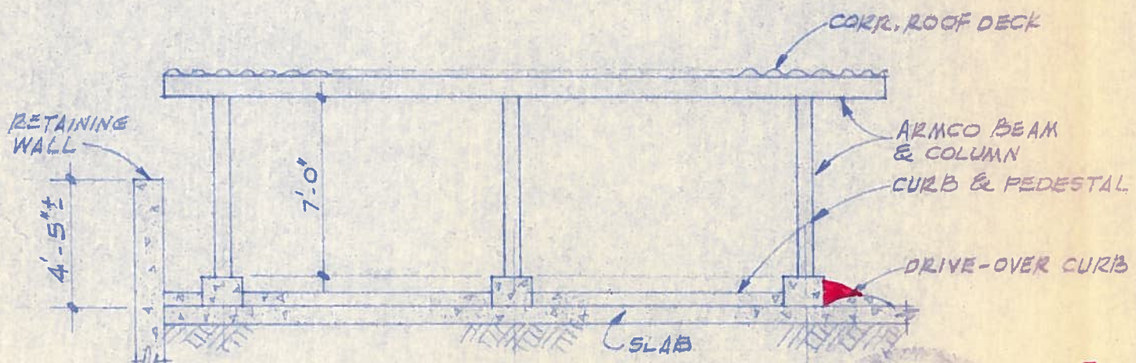
SECTION A-1



SECTION C-1



SECTION B-1



SECTION D-1

FIGURE D-2

REV. SHOWN IN RED

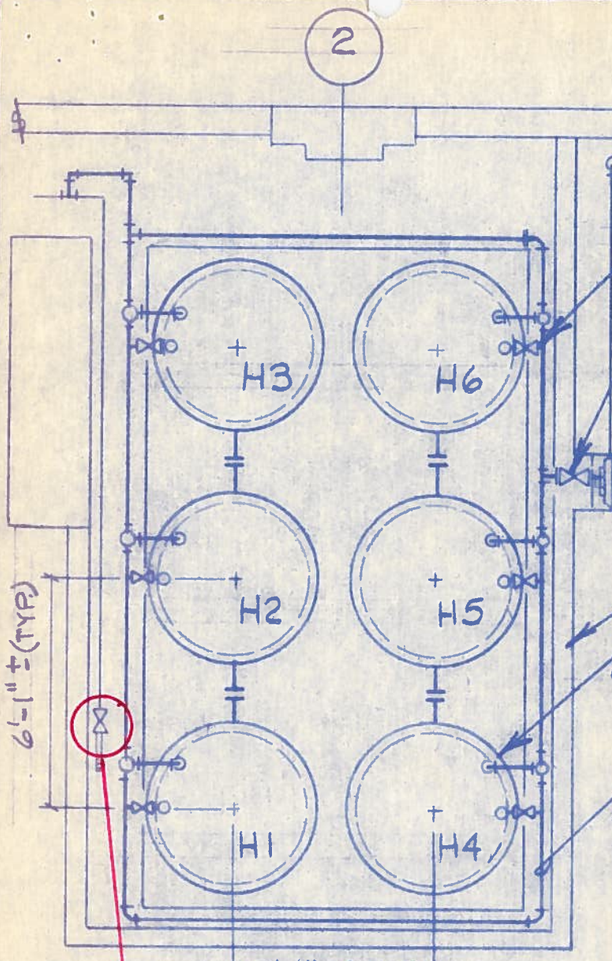
SCALE	NONE	
DRAWN	C.L. COHEN	
APPROVED	[signature]	9/27/82
APPROVED	[signature]	9-27-82
R.F.F.O.	F.O.	

MDC - ST. LOUIS
HAZARDOUS WASTE STORAGE
TRACT I - CYANIDE / STORAGE

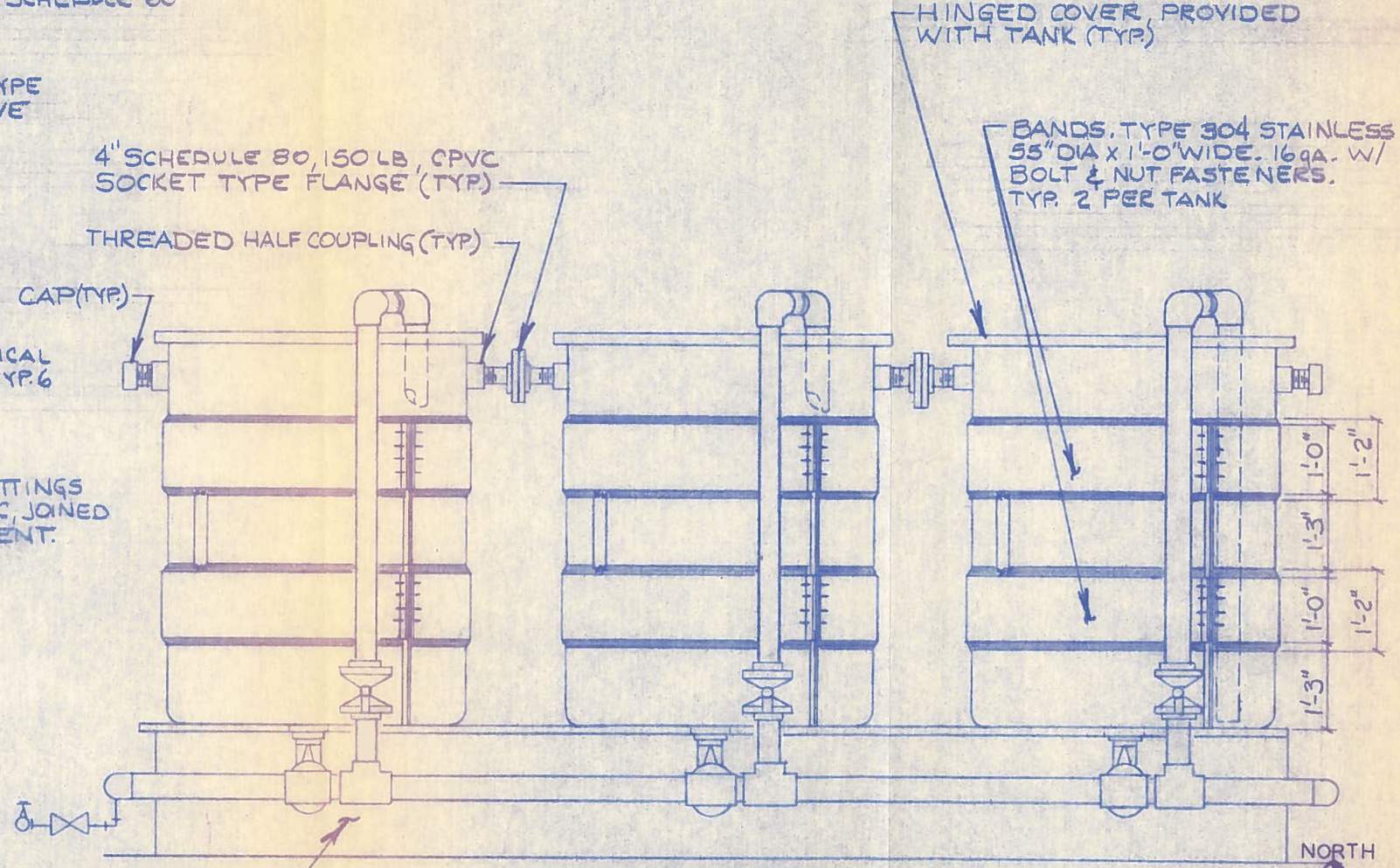
APPROVED FOR CONSTRUCTION
BY _____
DATE _____

MCDONNELL AIRCRAFT COMPANY
MCDONNELL DOUGLAS CORPORATION
PLANT ENGINEERING
SKPE SHEET 1 OF 1

ENCL NO 4



PLAN VIEW
STORAGE TANKS
SCALE: NONE



EAST ELEVATION
STORAGE TANKS
SCALE: NONE

FIGURE D-6

SCALE	AS SHOWN	
DRAWN	K. MOYER	
APPROVED	[signature]	9/27/82
APPROVED	[signature]	9/27/82
R.F.F.O.	F.O. 8	

MDC — ST. LOUIS
HAZARDOUS WASTE
6 - 750 GAL. STORAGE TANKS

APPROVED FOR CONSTRUCTION
BY
DATE

MCDONNELL AIRCRAFT COMPANY
MCDONNELL DOUGLAS CORPORATION
PLANT ENGINEERING

SKPE SHEET 1 OF 1

Engineer's Certification

This is to certify that this application has been prepared to comply with the regulations of the Resource Conservation and Recovery Act and all applicable standards, rules, and regulations for hazardous waste storage facilities. It is my understanding that this facility has been designed to provide adequate protection of the health of humans and other living organisms.

Registered Professional Engineer Submitting Plans

Name: Earl M. Myers (Director)

Phone: (314) 234-7058

Name of Consulting Firm: Plant Engineering Department
(McDonnell Aircraft Company)

Address: P.O. Box 516, St. Louis, Missouri 63166

Signature: Earl M Myers

Registration Number: E 8041

Date: 2 MAR 84

LIST OF ATTACHMENTS

MCDONNELL DOUGLAS CORPORATION

STANDARD MAINTENANCE PROCEDURE

S.M.P. No. 190-70-13

TITLE: HYDROCARBON LEAK DETECTORS FOR UNDERGROUND TANKS

EFFECTIVE: 25 JANUARY 1984

PLANT ENGINEERING

A. PURPOSE

To establish procedures and responsibilities for equipment operation

B. SCOPE

This procedure covers the operation and maintenance of the leak detectors associated with the storage of hazardous hydrocarbon wastes in underground tanks in Tract I.

C. EQUIPMENT AND/OR MATERIALS

1. Mallory "Pollulert" Hydrocarbon Detection System, consisting of an electronic control box, Model POL 101 - bench mount
2. Mallory "Pollulert" Ground Water Probes, Model POL 204
3. Mallory "Pollulert" Connecting Cable, Model POL 312
4. Monitoring wells, consisting of 6-inch I.D. Schedule 40 PVC pipe slotted (well casing)

D. GENERAL

1. The principle of operation is as follows.
   1.1 The Pollulert Hydrocarbon Detection System continuously monitors the thermal conductivity of the fluid surrounding the sensor. Thermal conductivity is the rate of heat transfer per unit area (calories/second, cm^2) per unit temperature gradient (°C/cm). Hydrocarbon thermal conductivity is in the narrow range of .0003 to .0005, compared to .0013 for water and .00006 for air.
   1.2 The sensor consists of a semiconductor junction, which is heated by passing a constant current through it for a constant time period. The temperature of the sensor is then measured. It is then allowed to cool for another time period and again measured. The difference between these two temperatures is a function of the thermal conductivity of the surrounding medium. The cycle is then repeated.
   1.3 A microprocessor is used to perform the various operations of cycling, measuring, storing, and calculating. It is programmed to signal when a temperature difference corresponding to the thermal conductivity of hydrocarbon, air, or water is measured. Measurements are averaged over a number of cycles to assure against false signals.

1.4 Long-term stability, even during extended power outages, is assured by providing a calibrated reference point in the form of a variable resistor, which is set during installation. If recalibration is needed, the electronic control is switched into the calibrate mode while the sensor is immersed in water. The microprocessor will automatically perform a 10-minute calibration cycle and will indicate a new setting of the variable resistor. Hydrocarbon is not needed for calibration.

2. Operating Instructions

2.1 On/Off switch should be on and calibrate monitor arrow should point to "Monitor."

2.2 Turn the Off/Loud control clockwise to place hydrocarbon alarm in standby condition. If hydrocarbon is detected at any sensor, the audible alarm will sound. Advancing the control further clockwise increases the audible output of the alarm. To turn off or defeat the alarm, turn the control counterclockwise until a click is heard. Sensor lamps, relay contacts, and 0 to 6 VDC output will continue to operate, even though the audible alarm is silenced.

2.3 Interpreting Sensor Lamps

2.3.1 Under normal operating conditions, all lamps should be off.

2.3.2 If hydrocarbon is detected at a sensor, the red sensor lamp will flash on and off.

2.3.3 If ground water probes should not float, but become dry, the yellow lamp will flash. The probes should be inspected to determine if the float has hung up and become high and dry or if the well has gone dry. It is not necessary that water be present; hydrocarbon that enters a dry well will be detected.

2.3.4 The cable to the probe is monitored by the Pollulert System. If, for some reason, the cable is severed, or the sensor should fail (open circuit), the yellow lamp for the sensor will light continuously.

2.3.5 Any change in the status of a sensor between the mediums of air-water-hydrocarbon will be indicated by the visual indicators after two to four minutes.

3. Operational Responsibilities

3.1 Calibration - Maintenance

3.1.1 The procedure for functional calibration is as follows. The leak detection system is checked for functional operation every 13 weeks. This functional check consists of removing each of the underground leak detection probes from their respective monitoring wells and placing each detector probe into a container of ethylene glycol. This simulates the detection of hydrocarbons in the monitoring well. A properly functioning probe causes a visual and audio alarm to occur. After the probe and alarm system are proven to be functional, they are marked with a Calibration Department seal that reflects the date and inspector's name.

Note: This functional calibration technique has been verified as being a valid functional check by Mr. Darryl Day of Pollulert Systems, Mallory Components Group, Indianapolis, Indiana [telephone (317) 856-3857].

D. 3. 3.1 3.1.2 Repair leak detection system.

3.2 Alarm Response

3.2.1 When an alarm sounds, the responsible Plant Engineering area supervisor will take the following action:

a. Record source of alarm;

b. Turn off audible alarm;

c. Inspect the area for evidence of leakage, tank rupture, spill, etc. If a problem is apparent, immediately begin action to stop the source, begin cleanup activities, and then notify Environmental Compliance; OR

If no cause for the alarm can be visually detected, report this condition to Environmental Compliance;

d. Contact Environmental Compliance as follows.

On Monday through Friday (8:00 a.m. to 4:30 p.m.), telephone Sta. 23319, Environmental Compliance, and report the alarm situation.

On all other times (including holidays), contact the MDC telephone "Operator" and report a "Pollution Problem."

3.3 Environmental Compliance

3.3.1 On each workday, inspect each detector for proper operation.

3.3.2 Request equipment repairs whenever detectors or storage tanks are not operating as designed.

3.3.3 Respond to and resolve all reports of detector alarms.

3.3.4 Provide instructions and directions for decontamination as required by environmental law.

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I-1c Maximum Waste Inventory

1. Drum storage facility at Bldg. 27 scrap dock - 360 full drums and 396 empty drums
2. Spent caustic tanks east of Bldg. 52 - 20,000 gallons
3. Titanium etch storage tanks at Bldg. 52 - 4,500 gallons R
4. Steel chem-mill storage tanks at Bldg. 52 - 2,500 gallons
5. Underground waste jet fuel tank, Bldg. 28 - 5,000 gallons
6. Underground waste jet fuel tank at Fuel Pit #3 - 2,000 gallons
7. Underground waste jet fuel tank behind Hush House - 3,380 gallons R
8. Underground waste jet fuel tank by F-18 Silencer - 2,000 gallons
9. Underground waste oil tank east of Bldg. 6 - 1,000 gallons
10. Sludge holding tank at Bldg. 14 - 120,000 gallons
11. The explosives storage facility, Bldg. 10 - 100 pounds
12. Underground waste jet fuel tank at Fuel Pit #4 - 2,000 gallons R
13. Underground waste jet fuel tank at Ramp Station 1 and 2 - 4,380 gallons R

I-1d Inventory Removal and Disposal or Decontamination of Equipment R

1. Drum storage facility west of Bldg. 39: Remove all remaining drums and ship to EPA-approved disposal facilities - four weeks. Remove corrosion from metal and empty and decontaminate sump - two weeks. Analyze asphalt overlay to determine if it is contaminated with hazardous waste - one week. Remove asphalt (if hazardous) and dispose of it at an EPA-approved disposal facility - four weeks. Fill sumps with sand and seal with concrete - one week. Either convert the building to other use or demolish it and salvage the metal as scrap iron.

TABLE I-1
CLOSURE COST ESTIMATES

A. DRUM STORAGE FACILITY WEST OF BLDG. 39 (2 SHELTERS)

1. Dispose of all containers of hazardous waste at an EPA-approved disposal facility.
2. Remove any corrosion from metal shelter surfaces, deposit in drums, dispose of at an EPA-approved disposal facility.
3. Remove asphalt floor overlay and curb. Deposit in drums and dispose of at an EPA-approved disposal facility.
4. Fill sumps with sand, seal with concrete.
5. Dismantle shelters.

Total Estimated Cost: $64,800.00

B. SPENT CAUSTIC STORAGE TANKS EAST OF BLDG. 52 (2 TANKS)

1. Remove all liquid and sludge from tanks, dispose of at an EPA-approved disposal facility.
2. Decontaminate inside and outside of tanks.
3. Disconnect pumps, piping, valves, and fittings - decontaminate.
4. Dispose of decontamination fluids and equipment at an EPA-approved disposal facility.
5. Remove tanks.
6. Analyze asphalt and soil for contamination.
7. Remove contaminated asphalt and soil. Dispose of at an EPA-approved disposal facility.

Total Estimated Cost: $29,600.00

Table I-1 (Continued)

C. WASTE ACID STORAGE TANKS, BLDG. 52 (11 TANKS)

1. Remove all liquid and sludge from tanks. Dispose of at an EPA-approved disposal facility.
2. Decontaminate tanks and piping. Dispose of decontamination fluids at an EPA-approved disposal facility.
3. Remove tanks, piping, and platforms.
4. Analyze limestone and soil surrounding and under tanks; if contaminated, remove and dispose of at an EPA-approved hazardous waste landfill.

Total Estimated Cost: $25,300.00 R

D. UNDERGROUND WASTE OIL AND JET FUEL STORAGE TANKS (7 TANKS) R

1. Remove all waste oil or jet fuel.
2. Remove all sludge and residue from tanks.
3. Dispose of waste oil, jet fuel, sludge, and residue at an EPA-approved disposal facility.
4. Evacuate and remove tanks.
5. Analyze surrounding soil; if contaminated, remove and dispose of at an EPA approved hazardous waste landfill.
6. Fill in holes with fresh soil or limestone screening.

Total Estimated Cost: $104,500.00 R

E. SLUDGE HOLDING TANK, BLDG. 14

1. Remove all sludge; dispose of at an EPA-approved facility.
2. Wash down walls and floor of concrete tank.
3. Flush all piping, pumps, and centrifuges.

Total Estimated Cost: $30,800.00 R

Table I-1 (Continued)

F. EXPLOSIVES WASTE STORAGE FACILITY, BLDG. 10

1. Remove all explosive devices and material.
2. Sweep down walls, shelves, ledges, floors, etc. Remove hazardous residue.
3. Dispose of explosive devices, material, and residue at an EPA approved TSD facility.
4. Demolish building and dispose of rubble at local landfill.

Total Estimated Cost: $33,000.00 R

NOTE: All cost estimates assume the use of outside contract services and include 10% contingencies.